



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,455	07/10/2008	Marcel Lapointe	102003/18	1331

7590 06/04/2010  
Allan Williams  
PO Box 24001  
Hazeldean RPO  
Kanata, Ontario, K2M 2C3  
CANADA

EXAMINER
----------

WONG, LINDA

ART UNIT	PAPER NUMBER
----------	--------------

2611

MAIL DATE	DELIVERY MODE
-----------	---------------

06/04/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,455	<b>Applicant(s)</b> LAPOINTE ET AL.	
	<b>Examiner</b> LINDA WONG	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-20, 25 and 27-29 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 10-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Response to Arguments***

1. Applicant's arguments with respect to claim 1-5, 7-8, 10-20, 25, 27-29 have been considered but are moot in view of the new ground(s) of rejection.

***Information Disclosure Statement***

2. The US patent and publication references cited in the Search Report 11/25/2007 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 CFR 1.98(a)(1). In order to have the references printed on such resulting patent, a separate listing, preferably on a PTO/SB/08A and 08B form, must be filed within the set period for reply to this Office action. Regarding the IDS submitted 2/23/2010, the US and publication references listed in this IDS and cited in the search report 11/25/2007 has been considered but not all the references in the search report is listed on this IDS. An IDS must be submitted for the rest of the references in order for consideration.
3. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File

Art Unit: 2611

Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Salinger (US Patent No.: 6212229) in view of Liao et al (US Patent No.: 6650698), further in view of Stonick et al (US Publication No.: 20050025228).

a. **Claim 1**,

i. Salinger et al discloses

Art Unit: 2611

- “an adaptive transmit equalizer to receive an outgoing serial data stream and provide launch data into the communication channel, the launch data equalized to transmit control parameters” (Fig. 3, label 38 as the adjustable pre-emphasis filter to receive an outgoing serial data stream (input from label 28) and provide data to the channel (label 12). The equalizer receives control parameters from label 52.)
- “an adaptive receive equalizer an incoming data stream from the communication channel and condition the received incoming data stream to produce an equalized output serial data stream in response to receive control parameters” (Fig. 3, label adaptive equalizer for filtering the incoming data stream (label 14), wherein the equalizer is adjusted according to the parameters of label 52.)
- “control means operable to control said adaptive transmit equalizer and said adaptive receive equalizer based on said incoming data stream” (Fig. 3, label 52)
- Salinger et al fails to disclose “wherein the adaptive receive equalizer includes an adaptive linear equalizer in combination with an adaptive non-linear decision feedback equalizer (DFE) to condition the received incoming data into said equalized output serial data stream”
- Liao et al discloses “the adaptive receive equalizer includes an adaptive linear equalizer in combination with an adaptive non-linear decision feedback equalizer (DFE) to condition the received incoming data into said

Art Unit: 2611

equalized output serial data stream.” (Fig. 5, label 510 as a linear equalizer, label 516 as a non-linear decision feedback equalizer to condition the received signal (input from label 508) and output from label 502 as the equalized output serial data stream.) It would have been obvious to one skilled in the art at the time of the invention to build the adaptive equalizer as shown in Salinger as disclosed by Liao et al so to compensate for linear and non-linear distortions, thus preparing the signal for further processing.

- Salinger et al fails to disclose “wherein the control means includes a data slicer, a positive offset monitor slicer and a negative offset monitor slicer, each slicer coupled to said equalized output serial data stream for producing said transmit control parameters and said receive control parameters”.
- Stonick et al discloses a slicer with positive and negative adjustable levels for controlling the receiver and/or system. (paragraph 34 and 90.)

Paragraph 90 discloses the positive data slicer level and negative phase slicer reference level is set to maintain a known offset with respect to the most negative data slicer level. Paragraph 3 discloses the system comprises an equalization circuitry in a transmitter, receiver or both. It would have been obvious to one skilled in the art at the time of the invention to incorporate a slicer within the control for controlling the receiver and transmitter as disclosed by Stonick et al in Salinger et al's invention so to compensate for intersymbol interference.

- b. **Claim 2**, Salinger et al discloses “the adaptive transmit equalizer has a symbol spaced feed forward equalizer with two taps corresponding to the cursor and pre-cursor.” (Fig. 3, label 38 shows a FIR filter, wherein an FIR filter’s basic fundamental blocks will have taps to delay the signal, coefficients, multiplication of the a respective coefficient with the output of tap (cursor and pre-cursor) and summation of the output of the multiplication.) Although Salinger does not disclose the filter has two taps, it would have been obvious to one skilled in the art based on the design choice of the inventor the number of taps within the filter.
- c. **Claim 3**, Salinger et al discloses “the adaptive transmit equalizer has a two coefficient FIR filter symbol spaced feed forward equalizer with two taps correspond to the cursor and pre-cursor, the output of which is the launch data.” (Fig. 3, label 38 shows an FIR filter, wherein an FIR filter will have taps along with coefficients. An FIR filter’s fundamental building blocks will have taps to delay the signal, coefficients, multiplication of the a respective coefficient with the output of tap (cursor and pre-cursor) and summation of the output of the multiplication. ) Although Salinger does not disclose the filter has two taps and two coefficients, it would have been obvious to one skilled in the art based on the design choice of the inventor the number of taps within the filter.
- d. **Claim 4**, Salinger et al discloses “the adaptive transmit equalizer has a symbol spaced feed forward equalizer with a tap corresponding to the cursor and M pre-cursor taps.” (Fig. 3, label 38 shows an FIR filter, wherein an FIR filter will

have taps along with coefficients. An FIR filter's fundamental building blocks will have taps to delay the signal, coefficients, multiplication of the a respective coefficient with the output of tap (cursor and pre-cursor) and summation of the output of the multiplication.) Although Salinger does not disclose the filter has two taps and two coefficients, it would have been obvious to one skilled in the art based on the design choice of the inventor the number of taps within the filter.

- e. **Claim 5**, Salinger et al discloses "the adaptive transmit equalizer has an M coefficient FIR filter that sums a portion of the cursor and the output of a symbol spaced feed forward equalizer with M taps each tap corresponding to a successively earlier pre-cursor up to the Mth pre-cursor to produce the launch data." (Fig. 3, label 38 contains an FIR filter, wherein an FIR filter's fundamental building blocks will have taps to delay the signal, coefficients, multiplication of the a respective coefficient with the output of tap (cursor and pre-cursor) and summation of the output of the multiplication.)

5. **Claim 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger as applied to claim 1, in view of Liao et al (US Patent No.: 6650698).

- a. **Claim 8**, Liao et al discloses "said DFE has a plurality of symbol spaced taps, each of which can be programmed independently." (Fig. 5, label 516 shows a decision feedback equalizer, wherein a plurality of symbol spaced taps would be found within the DFE. The abstract discloses updating the DFE. This indicates the taps can be programmed or adjusted or updated.)



6. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger as applied to claim 1, in view of Liao et al (US Patent No.: 6650698), further in view of MacTaggart et al (US Publication No.: 20030218502).

a. **Claim 7,**

- i. Salinger discloses an adaptive receive equalizer (Fig. 1, label 68), but fails to disclose the composition of the adaptive equalizer.
- ii. Liao et al discloses a linear equalizer in combination with an adaptive non-linear decision feedback equalizer. (Fig. 5, label 510,516)
- iii. Salinger in view of Liao et al fails to disclose the composition of the linear equalizer.
- iv. MacTaggart et al discloses "wherein said linear equalizer includes two distinct signal paths to condition the received incoming data, one signal path is a controllable pure gain stage and the other signal path is independently controllable pure gain stage coupled to a high pass filter, the combined output of both is gain adjusted and supplied" for further processing. ( Fig. 3, label 305 as the high pass filter (paragraph 34), label 310 as the variable gain amplifier for adjusting the gain, wherein the combination of the two is considered one path. The other path comprises label 320, a variable gain amplifier. Summation of the two paths is performed by label 315.) It would have been obvious to one skilled in the art at the time of the invention to build the linear equalizer, disclosed by Liao et

Art Unit: 2611

al, as disclosed by MacTaggart et al so to adjust frequency of the equalizer and prevent errors caused by the equalizer.

***Allowable Subject Matter***

7. **Claims 14-20,25,27-29** are allowed over prior art.
8. **Claims 10-13** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINDA WONG whose telephone number is (571)272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong  
6/3/2010

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611